THE VETERINARY RECORD

FOUNDED BY WILLIAM HUNTING. F.R.C.V.S., 1888

No. 24. JUNE 14, 1952 VOL. 64.

THE USE OF ANTRYCIDE PRO-SALT IN PROTECTING CATTLE AGAINST TRYPANOSOMIASIS WHEN IN TRANSIT THROUGH TSETSE AREAS

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Every year many thousands of cattle are trekked from the cattle-raising regions of Northern Nigeria and adjoining French territory to supply meat to the central and southern areas of Nigeria, where meat is in great demand, but where the incidence of trypanosomiasis is such as to preclude the keeping of cattle except on a small scale. The routes along which the cattle travel are often well defined and in all cases lie through country which is to a greater or lesser extent infested with tsetse flies. Thus, the stock routes from the provinces of Sokoto, Katsina and Kano, along which cattle travel southwards to Ilorin, a distance of 450 miles, all traverse an extensive *G. morsitans* belt, much of which lies in the bend of the Niger River, north of Jebba (see map overleaf). There can be no doubt that the majority of cattle travelling southward along these routes are infected with trypanosomiasis when they reach Ilorin. Macfie (1913) found all of 35 trade cattle slaughtered at Ilorin to be infected with trypanosomiasis. The losses which occur among those cattle which continue their journey southwards beyond Ilorin must be very great, although no figures indicating their extent are as yet available.

Mornet *et al.* (1951) compared the value of a number of trypanocidal drugs in protecting trade cattle against trypanosomiasis on their journey to the meat markets of the Ivory Coast. These authors concluded that the most valuable of the drugs used was antrycide pro-salt which was shown to afford complete protection against trypanosomiasis when given as a single inoculation at the commencement of a journey lasting 31 days. The challenge from tsetse encountered along the route taken by the cattle was such that seven out of 10 untreated cattle became infected with trypanosomiasis.

The experiment to be described below was undertaken jointly by the Veterinary Department of Nigeria and the West African Institute for Trypanosomiasis Research, and was designed to observe the effects of a single inoculation of antrycide pro-salt in protecting trade cattle against infection with trypanosomiasis on their journey to the southern meat markets of Nigeria.

EXPERIMENTAL PROCEDURES

A herd of 30 cattle was assembled at Kano where 20 were given an inoculation of antrycide pro-salt (an I.C.I. preparation; it is a mixture containing antrycide methyl sulphate and antrycide chloride in the proportion of 1·5: 2), while 10 were left untreated to serve as controls. The recommended dosage is 15 ml. per 300 kg. bodyweight, the equivalent of 1·5 grammes methyl sulphate 2·0 grammes chloride, up to a maximum of 20 ml. per animal, of the prepared suspension. The weight was estimated by taking body measurements. After inoculation the cattle were allowed to rest for 12 hours before commencing their journey southward.

The route chosen is shown on the map, and the journey, made on the hoof, took 45 days. The route was representative, from the point of view of the tsetse encountered, of those routes which run from north to south through the western portion of Nigeria. Twelve of the treated cattle which were sold in Ilorin continued the journey southward to Ibadan, where they arrived on the 59th day.

The routine along the journey was similar to that followed by normal trade cattle, but more time was allotted daily for grazing and the cattle were rested on the days on which blood smears were made. African herdsmen usually do the journey with their cattle in 30 days. The treated cattle arrived at their destination in better condition than ordinary trade cattle, having been subjected, however, to a greater challenge from tsetse by reason of their longer exposure. This may have had an effect on the incidence of infection among the untreated cattle observed at Ilorin.

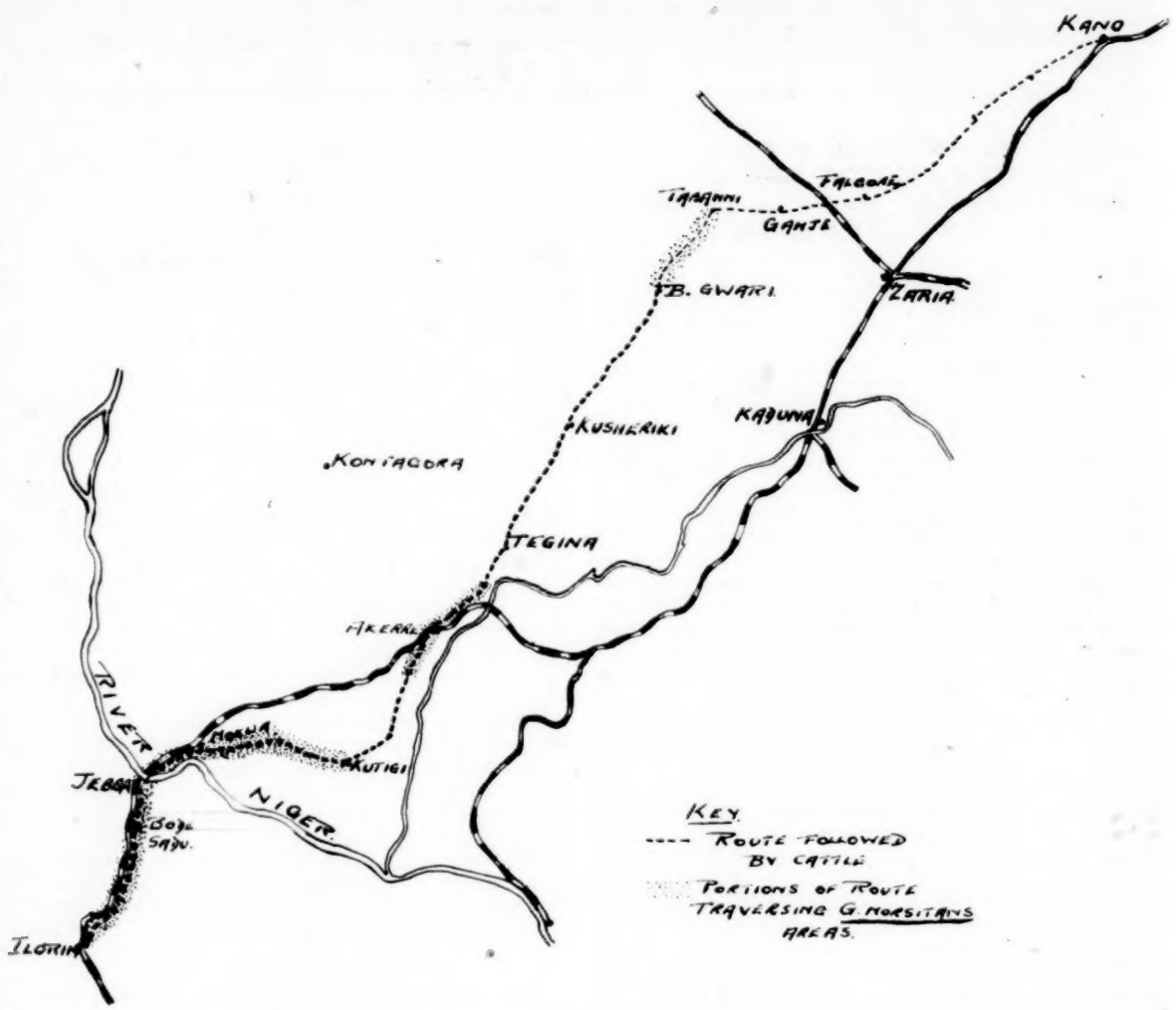
Blood smears were made from all the cattle prior to their departure from Kano, at nine places *en route* and on their arrival at Ilorin. Smears were also made at Ibadan from 12 of the treated cattle which continued their journey to this centre. The cattle were weighed at the same time as blood smears were made.

Throughout the whole of the journey the cattle were accompanied by a European livestock superintendent, who kept a daily record of the species of tsetse encountered and collected specimens for identification.

RESULTS

The cattle were exposed to the risk of natural infection from the 12th day of the trek onwards. On the 12th and 13th days they were exposed to *G. morsitans* and from the 26th to 45th day to a severe challenge from the same species together with riverine tsetse (*G. palpalis* and *G. tachinoides*) and some *G. longipalpis*. Between the 13th and 26th day they were exposed intermittently to the risk of infection from riverine tsetse. The *G. morsitans* areas traversed are shown on the accompanying map.

All the treated cattle were protected for 45 days, and 12 of them (those that went on to Ibadan) for 59 days. All 10 of the untreated beasts became infected and two of them died before the journey to Ilorin was completed. One of the treated cattle was slaughtered on the 15th day of the trek as it was too lame to travel farther. The main *post-mortem* finding was laminitis. The results of the examination of blood smears made from the untreated cattle are shown in the table, from which it will be seen that none of them showed infection before the 24th day of the trek, when *T. vivax* was found in the blood of one (No. 21) and the non-pathogenic *T. theileri* in the blood of a second (No. 2). On the 27th day the cattle entered the main *G. morsitans* belt, remaining in it until Ilorin was reached on the 45th



TABLE

SHOWING THE RESULTS OF EXAMINATION OF BLOOD SMEARS MADE FROM UNTREATED CATTLE, AT 11 PLACES ON THE JOURNEY FROM KANO TO ILORIN

Brand number	Place and days out of Kano										
	Kano 0	Falgore 4	Gamje 8	B. Gwari 14	Kusheriki 19	Tegina 24	Akerre 29	Kutigi 34	Mokwa 39	Bode-Sadu 43	Ilorin 45
1	—	—	—	—	—	—	—	—	T.v., T.b.	Dead	—
2	—	—	—	—	—	T.t.	—	—	—	T.v., T.b.	T.c.
9	—	—	—	—	—	—	—	—	T.b.	T.c.	T.c.
11	—	—	—	—	—	—	—	T.v.	T.v.	T.v., T.c.	T.v.
18	—	—	—	—	—	—	—	T.v.	T.b., T.c.	T.c.	T.c., T.v.
21	—	—	—	—	—	T.v.	T.v.	T.v.	T.v., T.b.	Dead	—
24	—	—	—	—	—	—	—	T.v.	T.b., T.v.	T.v., T.c.	T.c., T.v.
25	—	—	—	—	—	—	—	—	T.v., T.b.	T.v., T.c.	T.v., T.c.
28	—	—	—	—	—	—	T.v.	T.v.	T.v.	T.v., T.c.	T.v., T.c.
29	—	—	—	—	—	—	—	—	T.v.	T.v.	T.v., T.c.

T.v. = *T. vivax.* T.c. = *T. congolense.* T.b. = *T. brucei.* T.t. = *T. theileri.*

day. By the 38th day nine out of the 10 untreated cattle were infected and one was slaughtered as it was too sick from trypanosomiasis to travel farther. A second control animal, sick and exhausted, was slaughtered at Jebba on the 42nd day of the trek. All were infected by the 45th day. All showed mixed infections : in one ox of *T. congolense* and *T. brucei* ; in two, of *T. vivax* and *T. brucei* ; in three, of *T. congolense*, *T. vivax* and *T. brucei* ; and in four, of *T. congolense* and *T. vivax*. Of the infections which occurred, *T. vivax* was the first to be observed, followed by *T. brucei* and finally by *T. congolense*.

The weights of the cattle were subject to the inaccuracies of the method by which they were recorded, but it would appear from the results obtained that the treated group, on arrival at Ilorin, had gained an average of 11 kg. as compared with an average loss of weight among the untreated cattle of 13 kg. The cattle were graded at Mokwa on the 39th day of the trek. Of the controls, six were graded as in poor condition, three as in medium condition and one as in good condition. Of the 19 treated cattle, 13 were in good condition and six in medium condition. Commenting on the behaviour and condition of the cattle, Mr. Shipwright, who accompanied them, states that the controls began to show signs of distress near Jebba and that this became more marked as the journey continued. He states, further, that there was a marked difference in the condition of the treated and untreated cattle, a difference which became clearer as the journey continued beyond Jebba. That this difference was also apparent to the African cattle buyers at Ilorin is shown by the fact that most of the control cattle were slaughtered there, whereas the treated cattle were resold for slaughter elsewhere.

Summary

1. An account is given of an attempt to protect trade cattle, in transit through tsetse areas in Nigeria, against infection with trypanosomiasis, by the use of antrycide pro-salt.

2. A single inoculation of antrycide pro-salt afforded complete protection against trypanosomiasis for 59 days to cattle travelling on the hoof through areas heavily infested with *G. morsitans*, together with some riverine tsetse (*G. palpalis* and *G. tachinoides*).

3. All untreated cattle which travelled with the treated animals became infected and two died of trypanosomiasis by the 45th day of the trek.

4. It is shown that while the untreated cattle lost an average of 13 kg. weight on the journey, the treated cattle gained an average of 11 kg.

Acknowledgments.—The authors wish to express their acknowledgments to Mr. Shipwright, Livestock Superintendent, who accompanied the cattle throughout their journey, and to whom much of the success of the experiment was due, and to the veterinary officers who accompanied the cattle through their provinces. They also express their thanks to Dr. T. A. M. Nash, Chief Entomologist, West African Institute for Trypanosomiasis Research, for the identification of the tsetse flies caught, to Colonel H. W. Mulligan, Director of the West African Institute for Trypanosomiasis Research, and to Mr. R. S. Marshall, Inspector-General of Veterinary Services, for the help and encouragement which they gave.

References

Macfie, J. W. Scott. (1913.) *Ann. Trop. Med. Parasitol.* **7**. 1.
Mornet, P., Lalanne, A., & Cissoko, M. (1951.) *Bull. Serv. l'Elevage Indust. Anim. L'Afrique occidentale Francaise.* **4**. 7.

AN OUTBREAK OF *T. SIMIAE* INFECTION IN PIGS IN NIGERIA AND ITS ATTEMPTED CONTROL USING ANTRYCIDE METHYL SULPHATE

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The available literature relating to outbreaks of acute porcine trypanosomiasis in tropical Africa was reviewed by Hoare (1936). He stabilised the nomenclature and systematic position of *T. simiae* and discussed the epidemiology of the infection of pigs. In reference to the epidemiology of the disease, Hoare (*loc. cit.*) pointed out that several previous observers had remarked on the paucity, or apparent absence, of tsetse fly in the immediate neighbourhood of localities where outbreaks occurred, but had emphasised the prevalence of biting flies such as *Stomoxys*, *Tabanus* and *Haematopota*, which they considered were mainly concerned in the spread of the infection.

The observations of the present author on an outbreak of *T. simiae* infection of pigs in Nigeria confirm the work reviewed by Hoare, in relation to the epidemiology of the disease, in that they suggest that the infection was introduced originally by tsetse flies and was later spread by mechanical vectors. In addition, the failure to effect satisfactory control of the outbreak by the use of antimosan and of antrycide methyl sulphate is recorded.

History of Outbreak and Epidemiology

The piggery in which the outbreak occurred was situated near Minna and housed a herd of 270 pigs which had been built up and maintained over a period of six years. No previous outbreaks of trypanosomiasis had occurred among the pigs.

A survey carried out at the time of the outbreak revealed no tsetse flies in the immediate vicinity of the sties. *G. palpalis* was, however, present in small numbers on a stream running along the boundary of the property about 300 yards from the main piggery. Other blood-sucking flies were not greatly in evidence when the piggery was first visited but *Haematopota* were said to have been prevalent during the previous month.

The outbreak commenced two months before the author's first visit, when the shortage of suitable foodstuffs had caused the owner, for the first time in the history of the piggery, to turn out 23 sows and eight baconers to graze daily in the vicinity. These pigs were frequent visitors to the stream at places where tsetse were seen later. During this time the sows were housed at night in separate sties away from the main piggery. Within the first fortnight of their exposure to tsetse, 10 of the 23 sows died from trypanosomiasis and four were sold. The nine survivors were then moved into that part of the piggery where the breeding stock of boars and sows were housed in individual pens. Here, seven of the sows died during the next six weeks. The last of these sows to die was seen by the Provincial Veterinary Officer, whose advice was sought at this stage. Examination of a blood smear from this animal showed a heavy infection with *T. simiae*.

The eight baconers were brought into the main piggery after a fortnight's exposure to the risk of infection along the stream, and were housed, under crowded conditions, with other baconers. All of the eight bacon pigs died within the next month, together with four other pigs with which they had been in contact in the main piggery. When, eventually, the advice of the Provincial Veterinary Officer was sought, a further 13 bacon pigs had died. Blood smears

examined at this time from six bacon pigs which were sick showed heavy infections with *T. simiae*. The pigs were treated by the Provincial Veterinary Officer with antimosan.

The spread of the disease among the baconers, housed under crowded conditions, was most striking when compared with the failure of the disease to spread from the sows to other breeding stock with which they were housed, side by side, but in individual pens. This suggested that after its introduction by tsetse the disease was spread among the baconers mainly by mechanical vectors.

Symptoms Observed and Course of the Disease

Very few symptoms were observed among infected pigs. The main symptom and that noted by the owner was inappetence. Further examination revealed a pyrexia of varying degree, some weakness of the hind limbs, pallor of the skin and mucous membranes and a tendency for the pigs to be more easily caught. The course of the disease varied. It was noted that certain of the pigs, although sick, remained alive for six days ; others died in a shorter period of time.

Treatment and Subsequent History

When the piggery was first visited, two months after the beginning of the outbreak, 14 pigs were found to be infected with *T. simiae*. Of these, six had been treated with antimosan by the Provincial Veterinary Officer during the previous fortnight ; four pigs had received two injections at an interval of a week, and two pigs one injection only. A further two pigs, also treated with antimosan, died after the second injection. One of these which died 11 days after the second injection of antimosan showed a heavy infection with *T. simiae*.

In view of the successful results obtained by Wilson (1949) by the use of antrycide methyl sulphate in *T. simiae* infections of pigs, treatment with this drug was adopted. Six of the pigs were treated with 3 mg. per kg. and eight with 5 mg. per kg. of a 5 per cent. solution of antrycide methyl sulphate. The results of treatment of the 14 infected pigs are shown in the table.

Table
Showing the Results of Treatment with Antrycide Methyl Sulphate of 14 Pigs infected with *T. simiae*

Pig No.	Previous treatment	Dose of antrycide mg. per kg.	Results of treatment
1	—	3	Relapse
2	Antimosan (1)	3	,,
3	—	3	,,
4	—	3	,,
6	Antimosan (2)	3	,, (died)
18	—	3	Sold
7	Antimosan (2)	5	Relapse
8	,, (2)	5	,,
9	,, (2)	5	,,
10	,, (1)	5	,, (died)
16	—	5	Sold
37	—	5	,,
60	—	5	,,
73	—	5	,,

Figures in parenthesis refer to number of treatments with antimosan.

In view of the evidence that the spread of the disease inside the piggery was by mechanical vectors, all the remaining pigs were treated with 5 mg. per kg. of the drug. Blood smears from the 14 treated pigs were examined daily for seven days and thereafter, on every alternate day, for a further 35 days. Between the 32nd and 37th day after treatment, three of the treated pigs relapsed and at a later visit a further six pigs were found to have relapsed between the 37th and 55th day. Two of these pigs, in the absence of further treatment, died of trypanosomiasis—one three days and one 21 days after trypanosomes first reappeared in the blood. Five of the treated pigs were sold by the owner as apparently healthy, before they had time to relapse.

On its reappearance among the treated pigs the disease ran a much more chronic course than on its first appearance. Before treatment with antrycide was commenced the strain killed two susceptible pigs into which it was inoculated ; in one, death occurred six days and in the other eight days after parasites were first seen in the blood. When the disease reappeared, however, it was noted that one pig (No. 10) remained alive for 21 days after parasites first reappeared in its blood and two others (No. 8 and No. 9) were re-treated 24 to 26 days after the reappearance of parasites. It would seem that the initial treatment with antrycide methyl sulphate, in aborting the first attack, had given the pigs the chance to develop a substantial degree of protection against the effects of subsequent relapse. That the strain still retained the power to kill was seen in the case of pig No. 6 and pig No. 10, both of which relapsed and died, in the absence of the retreatment with antrycide methyl sulphate.

Seven of the pigs which relapsed were re-treated at the same dose level as on the first occasion. The results of treatment of these pigs were not observed, as in view of the losses already incurred, the owner decided to slaughter the pigs.

The strain was, however, subinoculated from pig No. 8 at the time of relapse into two healthy pigs which were afterwards observed under tsetse-free conditions at a place remote from that in which the outbreak occurred. Trypanosomes appeared in the blood of both these pigs four to five days after inoculation when they were treated with 5 mg. per kg. of antrycide methyl sulphate. Trypanosomes disappeared from the blood of both pigs within 24 hours. One of the pigs died from causes other than trypanosomiasis 12 days after treatment ; the second relapsed after 42 days.

Summary

1. The history of an outbreak of *T. simiae* infection of pigs in Nigeria has been described.

2. Evidence is produced which suggests that the disease, introduced initially by *G. palpalis*, was later spread mainly through the agency of mechanical vectors.

3. It has been shown that both antimosan and antrycide methyl sulphate were ineffective in controlling infections with this strain of *T. simiae* of pigs.

Acknowledgments.—The author wishes to express his thanks to Mr. D. E. Macgregor, Provincial Veterinary Officer, for valuable assistance rendered at the scene of the outbreak.

References

Hoare, C. A. (1936.) *Trans. R. Soc. Trop. Med. Hyg.* **29.** 619.
Wilson, S. G. (1949.) *Vet. Rec.* **61.** 391.

Assessment of Pig Breeds for Bacon Production

Merits as bacon producers of various breeds of pigs are to be assessed at a testing station, the second of its kind in the country, which was opened recently at Selby, in Yorkshire, by Mr. R. J. Charlton, Vice-President of the National Farmers' Union. The intention is to control feeding and management of pigs from birth to maturity at about 200 lb. live weight, and to vary diets to decide what forms of feeding are best. The finished animals will be sent to Sherburn-in-Elmet bacon factory, where they will be graded and measurements made of proportions of fat and lean meat, the thickness and distribution of fat, and the shape of hams.

The station has been established by the British Oil and Cake Mills Ltd., which maintains another at Stoke Mandeville, in Buckinghamshire. The sponsors estimate that it will take at least five years to decide the best bacon strains, but in trials with more than 1,000 animals at Stoke Mandeville since 1948 the Large White breed has shown superior characteristics.

ACCURATE AND RAPID HAEMOGLOBINOMETRY

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The method of estimating haemoglobin to be described was evolved when the need for an accurate and rapid technique arose in this laboratory. There are a number of methods of estimating haemoglobin, such as the use of absorbent papers and standards (Tallqvist, 1900), visual comparison of dilute solutions of oxyhaemoglobin with colour standards, and the carbon monoxide method of Haldane (1901). All these methods suffer from the disadvantage that accuracy is sacrificed to speed of operation. There are also several more accurate methods of estimating the haemoglobin content of blood, notably the oxygen absorption capacity method of Van Slyke and Neill (1924), the acid haematin method of Sahli (1931), the alkaline haematin method of Wu (1922), the pyridine haemochromogen method of Rimington (1942) and the iron content method of King, Gilchrist and Delory (1944). While certain of these methods are quite accurate, they are tedious to perform and unsuitable for routine use. Accuracy and rapidity of operation may be combined in methods employing an absorptiometer to measure the density of dilute solutions of oxyhaemoglobin.

In the technique to be described, the absorptiometer used is the E.E.L. model. In this apparatus light rays from an electric filament bulb first pass through a colour filter (which may be changed to suit the particular work being done), then through an adjustable opening, next through a test tube containing the solution under examination and finally the rays impinge on a photoelectric cell connected to a micro-ammeter. This meter registers the amount of light falling on the cell. The meter scale is logarithmic so that the scale readings vary directly with the density of the solution under test, from zero to 100 representing complete absorption of light.

STANDARDISATION OF APPARATUS

Before the absorptiometer can be used for routine haemoglobin estimations it is necessary to determine the relationship between the haemoglobin contents of various dilutions of oxyhaemoglobin and the readings which these dilutions produce on the scale. For this purpose, a sample of blood, the haemoglobin content of which has been determined accurately, is required. A method commonly used for this primary estimation is that described by Gibson and Harrison (1945) which is a modification of the alkaline haematin method. It consists in comparing the density of a specially prepared standard colour solution with the density of a known dilution of blood treated with alkali.

In the present instance, the method used is that of Roets (1940) as modified by Rimington (1942). It is more time-consuming than Gibson and Harrison's method, but it has a certain advantage in being more accurate. Using this method, all the haem pigments in the blood are converted to pyridine haemochromogen and the density of a known dilution of treated blood is compared with that of a known solution of pyridine haemochromogen prepared from crystalline haemin of known iron content. The advantage of this method is that pyridine haemochromogen made from blood and that made from crystalline haemin give the same colour for equal iron contents. The application of this method to the standardisation of the photoelectric apparatus may be outlined briefly as follows. The procedure has been modified from Wintrobe (1946).

1. A number of solutions of haemin in varying known dilutions in N/10 sodium hydroxide solution are prepared.
2. Pyridine is added to convert the haemin to pyridine haemochromogen.
3. With a green filter (Tricolour No. 404) in place, zero is adjusted on the absorptiometer scale using a standard test tube containing N/10 sodium hydroxide solution only. Readings are obtained for the dilutions of pyridine haemochromogen and a graph is plotted of readings against haemin contents. This graph should be a straight line passing through zero.
4. A known dilution of blood in N/10 sodium hydroxide solution is treated with pyridine and a reading obtained. From the graph already prepared the amount of haemin in the blood is found.
5. Simple dilutions of the same blood in 1 per cent. ammonium hydroxide solution are now made and readings for these dilutions of oxyhaemoglobin are obtained on the scale.
6. As the haemin content of the blood is known, it is now possible to calculate the haemoglobin content of the blood and of the various dilutions of it for which readings have been obtained. In calculating haemoglobin content from haemin content, haemoglobin is assumed to contain 0·339 per cent. iron (Drabkin, 1945). As haemoglobin contains four atoms of iron (atomic weight 56), the molecular weight of haemoglobin is 65,888. In each molecule of haemoglobin there are four molecules of haemin (molecular weight 651·4) so that haemin may be converted to haemoglobin by multiplying by the factor 25·2. Now that the haemoglobin contents of the dilutions of blood are known, a graph is plotted of the scale readings against haemoglobin content in grammes per 100 ml. This graph is used for future routine haemoglobin estimations.

ROUTINE USE

In routine use 0·04 ml. of the blood to be tested is drawn into a grade "A" 0·1 ml. pipette and transferred to a McCartney bottle or other similar container having a capacity of about 25 ml.; 20 ml. of 1 per cent. ammonium hydroxide solution is now run in from an automatic pipette. The stable oxyhaemoglobin solution thus formed is inverted a few times to ensure thorough mixing. The absorptiometer is switched on and allowed to "warm up" for a few minutes. A $\frac{5}{8}$-inch colorimeter tube containing ammonia solution only is placed in the instrument and the meter needle carefully adjusted to zero by manipulation of the adjustable light opening. About 10 ml. of the oxyhaemoglobin solution is transferred to a second and matched colorimeter tube and this is placed in the instrument after removal of the tube of diluent. The reading is noted. Using the tube of ammonia diluent, zero is adjusted once more and a further reading found for the oxyhaemoglobin solution. This reading should agree with the one first obtained, but if it does not the first result is ignored, as a discrepancy between the readings is due to insufficient time having been allowed for "warming up" prior to taking the first reading. It is essential to adjust the needle precisely to zero with the matched tube of ammonia water in position before proceeding to take a test reading.

It is not necessary to use a dry colorimeter tube for each estimation. When a wet tube is to be used it is rinsed out once, using approximately 10 ml. of the oxyhaemoglobin solution to be next tested. There will be left approximately 10 ml. of the solution for use in the actual estimation. Parallel estimations made using dry tubes and wet tubes rinsed as described gave identical results in every case. These results are shown in the table.

TABLE

RESULTS OF ESTIMATIONS MADE ON 12 SAMPLES OF BLOOD BY THE ALKALINE HAEMATIN METHOD AND BY THE METHOD DESCRIBED USING (*a*) DRY TUBES AND (*b*) WET TUBES.

No. of sample	Haemoglobin content in grammes per cent. Alkaline haematin method	Present method (*a*) dry tubes	(*b*) wet tubes
H 197	13·0	13·0	13·0
H 200	19·2	19·4	19·4
H 206	16·3	16·4	16·4
H 207	13·9	14·0	14·0
H 208	11·5	11·5	11·5
H 209	10·7	10·7	10·7
H 211	6·4	6·4	6·4
H 212	8·8	8·9	8·9
H 213	7·9	7·9	7·9
H 214	10·9	11·0	11·0
H 215	10·4	10·4	10·4
H 218	4·9	5·0	5·0

DISCUSSION

The apparatus required, *viz.*, an E.E.L. test tube colorimeter (absorptiometer) with a green tricolour No. 404 filter and at least two matched ⅝-inch test tubes, an automatic pipette to deliver 20 ml., a reservoir of 1 per cent. ammonium hydroxide solution, grade "A" 0·1 ml. pipettes and containers to hold about 25 ml., is relatively inexpensive. The absorptiometer may be operated either from the mains electricity supply or from a battery so that it may be used away from a laboratory. While it is a wise precaution to standardise the apparatus as described every three months or so, it has been found that this is not essential.

Using the same model colorimeter, Welch and Walther (1951) described a technique of estimating haemoglobin involving the use of calibrated tubes, which they considered superior to methods employing graphs. Instead of reading haemoglobin values from a graph, they calibrated test tubes so that the dilution of a fixed amount of blood to a fixed point on any tube gave a scale reading which could be converted into haemoglobin in terms of per cent. Haldane by multiplying it by a simple factor. By varying the calibration of the tube and the factor by which the scale reading was multiplied, the result could be obtained in grammes per 100 ml. The advantages claimed for this method were that dry tubes were not necessary and that a stock of tubes was not required. The technique now described requires neither a stock of colorimeter tubes nor dry ones. It eliminates the need for standardising new tubes when breakages occur. In Welch and Walther's technique, readings are made at points on the scale much higher than those employed in the method now described. Since in the E.E.L. apparatus the scale is calibrated logarithmically, more accurate readings can be made in the lower ranges. The use of the automatic pipette for supplying the diluent eliminates the need for all but one accurate manual measurement—the transfer of 0·04 ml. of blood to the mixing container. There is no need for accurate filling of the tubes to calibrated marks. A supply of ordinary containers to hold approximately 25 ml. is required, but these need not be matched, nor need they be of any particular pattern.

In the method of estimating haemoglobin described, the measurement of light intensity by a photoelectric cell and galvanometer renders possible the obtaining of identical and accurate results for any particular sample of blood by different workers. Visual comparison of colour standards or light intensities, as is involved in the Newcomer disc method or in the use of the M.R.C. grey wedge photometer, renders the obtaining of accurate and reproducible results not always possible owing to individual variations in visual acuity and the possible presence of visual defects, notably partial or complete colour-blindness.

The results of a number of parallel estimations made by the present method and by the alkaline haematin method are shown in the table. Accurate results can be obtained very rapidly by the method described, and it is particularly useful when large numbers of estimations are required.

SUMMARY

The standardisation of the E.E.L. photoelectric colorimeter for the estimation of haemoglobin by the pyridine haemochromogen method is described.

A method of routine use of the standardised apparatus is suggested, to obtain accurate results rapidly.

REFERENCES

DRABKIN, D. (1945.) *Amer. J. Med. Sci.* **209.** 268.
GIBSON, Q. H., & HARRISON, D. C. (1945.) *Biochem. J.* **39.** 490.
HALDANE, J. S. (1901.) *J. Physiol.* **26.** 497.
KING, E. J., GILCHRIST, M., & DELORY, G. E. (1944.) *Lancet.* **1.** 239.
ROETS, G. C. S. (1940.) *Onderstepoort J. vet. Sci.* **14.** 451.
RIMINGTON, C. (1942.) *Brit. Med. J.* **1.** 77.
SAHLI, H. (1931.) Lehrbuch der klinischen Untersuchungs-Methoden. **2. 366.**
TALLQVIST. (1900.) Cited by Wintrobe, M. M. (1946.)
VAN SLYKE, D. D., & NEILL, J. M. (1924.) *J. Biol. Chem.* **61.** 523.
WELCH, G. K., & WALTHER, W. W. (1951.) *Lancet.* **1.** 548.
WINTROBE, M. M. (1946.) Clinical Haematology, 2nd edition. London: Henry Kimpton.
WU, H. (1922.) *J. Biochem.* (Japan). **2.** 173 and 189.

REVIEW

[Bakteriologische Fleischbeschau. [Bacteriology of Food Poisoning.] By RICHARD STANDFUSS. (1952.) Berlin: R. Schoetz. 96 pp. 14. - - DM.]

A useful little book on the bacteriology of food poisoning and written by one who has himself worked in this specialised field. There are four parts; the first contains a brief review of food poisoning, and the history of some classical outbreaks from 1876 onwards is mentioned. The importance of bacteria of the Salmonella group is thereby introduced.

Consideration is given in the second part to the rôle played by animals and the interesting distribution of the common Salmonella in the various animal species. For example, the primary-animal-pathogens include those causing equine abortion and fowl typhoid, whereas the secondary-animal-pathogens are considered to be those having a wider range of pathogenicity. The epidemiology becomes an interesting story when viewed from such angles and the interaction between man- and animal-infections is thus dealt with.

The third section concerns itself more with the actual bacteriology and techniques used in investigating outbreaks of disease; a full list of the Salmonella with their antigenic structure is given, in addition to the instructions concerning the methods employed in diagnosing and tracing the origin of outbreaks. The book is completed with a short account of botulism and for those acquainted with the German language this small volume becomes a contribution to a subject which has interests for medical and veterinary scientists.

Burnley Corporation Markets Committee reports that in connection with the proposed scheme of alterations and improvements to the abattoirs, the Committee has now approved revised plans submitted by the Borough Surveyor incorporating suggestions of the Ministry of Food and the Veterinary Officer.

THE VETERINARY RECORD
June 14, 1952

THE PROFESSION AND THE POULTRY INDUSTRY

IT is probable that the enormous expansion of, and advances which have been made in the poultry industry during the last decade, are not fully appreciated by the great majority of our profession. If it had not been for the considerable achievements of veterinarians throughout the world, more particularly perhaps in America and the British Isles, in the realm of disease control this industry would be in a sorry plight to-day and such development would hardly have been possible. One need refer only to the valuable contributions made on the control of such problems of major importance as Newcastle disease, fowl pox, bacillary white diarrhoea, coccidiosis and blackhead to realise the significance of this statement. Whilst vast specialised undertakings are appearing in considerable numbers, the advantage of integrating poultry keeping with general farming methods is also appreciated by farmers more to-day than ever before. In the struggle to increase the protein portion of the human ration, the industry plays a very vital part and in view of the world shrinkage of this commodity it should have an important future.

It has been suggested in this journal that the majority of poultry farmers feel that the veterinary profession as a whole is not interested and has little knowledge of poultry diseases. This surely can be true of only a limited number of our members, for it is accepted that poultry disease comes well within the veterinary orbit. Although individual treatment of poultry may not appear remunerative from the practitioner's point of view, the industry fully appreciates that the health of the stock as a whole is of more importance than its individual units and realises that advice on a flock basis is available in relation to hygiene, disease eradication, vaccination, tuberculin testing, blood testing, etc. In many parts of the country members of the profession already play a vital part in the control of diseases of poultry and have found their efforts appreciated and remunerative, but in other areas there is perhaps too great a tendency for those who keep poultry to go direct to officials. To some extent this may be due to the fact that in the past many of the commoner diseases of poultry were dealt with by the owner or by lay advice.

Of all the sections within our agricultural economy probably that represented by the poultry industry has the firmest grasp of the problems of management and disease. Poultrymen make it their business to read about and understand the problems which face them. It is only too clear, however, that many problems which occur arise directly from faults in management. There is all the more reason, therefore, why members of our profession should take advantage of every available opportunity of becoming acquainted with standard methods of management and special developments when these occur ; also of keeping abreast of progress within the field of disease. Special courses of lectures have been and could be arranged to bring those who are busily engaged in practice up to date. Those who have passed through the colleges during the last 10 years have perhaps been more fortunate than their predecessors, for only of recent times have the powers that be appreciated fully the need for a thorough grounding in poultry husbandry and disease control. Our teaching institutions are now well aware of developments and have already gone far to rectify any deficiencies which may have existed in the ranks of our profession in the past. We trust that the study of this subject will never again be relaxed but that it will keep pace with modern developments.

CLINICAL COMMUNICATION

RUPTURE OF THE UTERUS IN THE BITCH

J. ALLCOCK, B.V.Sc., M.R.C.V.S.,
AND
BARBARA M. PENHALE, M.R.C.V.S.,
CLIFTON, BRISTOL

A few months ago three cases of rupture of the uterus in the bitch were encountered during a period of three weeks. None has been seen before or since.

CASE 1. (J. A., 5.12.51.)

Subject.—Alsatian bitch, two years old, primiparous.

Examination.—She was first seen in the evening, having started to whelp 36 hours previously and having had six puppies, four of which had died. The bitch was obviously ill ; she had not eaten since whelping began, had no milk, was extremely thirsty and was vomiting almost continuously. She would not allow the two surviving puppies to suckle. Temperature, 105·8° F., respirations very rapid, visible mucous membranes injected.

Abdominal palpation, which was painless, revealed a large mass, presumed to be in the uterus. On vaginal examination, however, no foetus was discoverable, but a noxious brown fluid was passed.

Diagnosis.—Acute puerperal metritis with a foetus retained *in utero.*

Hysterectomy was decided upon.

Operation.—The bitch was anaesthetised with nembutal intravenously, and a mid-line incision made, when a large quantity of blood-stained fluid escaped. Omentum was adherent to the uterus, which was ruptured towards the tip of the right horn. A placenta, also adherent to the omentum, was displaced into the abdominal cavity. These adhesions were broken down and the uterus and contents removed. The abdomen was drained of fluid as far as possible and the wound sutured in the usual manner, using No. 2 catgut for the muscle and stainless steel wire for the skin.

Post-operative Course.—One million units of penicillin were given immediately after operation. The bitch began to feed next day and recovery began uneventfully. On the fifth day, however, the abdominal wound broke down, this being due, probably, to the gross infection from the peritoneal exudate at the time of operation. Under pentothal anaesthesia the wound was re-sutured (B. P.).

The bitch was discharged on the eighth day after operation and the skin sutures were removed eight days after the second suturing.

At the time of writing (20.4.52) the bitch is in excellent health.

The next day we were presented with the second case.

CASE 2. (B. P., 6.12.51.)

Subject.—Spaniel × bitch, nine years old, primiparous.

History.—The history was that whelping began four days previously. Two dead puppies were born two days later and the bitch was still straining when presented to us. Again there was temperature, thirst, vomiting, and a very sick bitch. A puppy could be palpated abdominally. In contrast to the Alsatian, she had plenty of milk.

Operation.—As the bitch was showing marked toxaemia, pentothal was selected as the anaesthetic and preparations were made to give it intermittently throughout the operation, though this proved not to be necessary.

Operation and findings were essentially the same as in the preceding case, except that rupture probably occurred sooner, as the adhesions were tougher and the dead puppy was free in the abdominal cavity.

Post-operative Course.—One million units of penicillin were given after operation.

The bitch made an uneventful recovery. As she continued to have plenty of milk, she was given the two surviving Alsatian puppies to rear, which she did very successfully.

CASE 3. (J. A., 31.12.51.)

Subject.—Bulldog × bitch, seven years old, multiparous.

History.—Whelping began two days before. She had had three puppies, one of which had died. Clinical signs were the same as in Cases 1 and 2, except that abdominal palpation was resented more.

Operation.—Again pentothal was used. No puppy was present in the uterus but one placenta remained. There was a very small rupture in the area of the placental zone, halfway along the left horn. Operation otherwise was as in the two preceding cases.

Post-operative Course.—The bitch died three hours later.

DISCUSSION

Two points of interest arise from these three cases.

Firstly, the cause of rupture. On the history and the position of the rupture it appears that operative interference can be discounted. In Cases 1 and 3 there was definitely an erosion of the uterus in the placental areas. Whether this was due to a type of autolysis or bacterial infection we cannot say.

In Case 2 the long delay between commencement of parturition and delivery of the first puppy suggests that uterine contraction may have been a factor in causation.

The second point which emerges is the amazing resistance of the bitch to peritonitis. The recovery of Cases 1 and 2 was due much more to natural resistance than to any antibiotic treatment.

LORD BOYD ORR ON NEW WORLD FOOD POLICY

At a reception recently held at the House of Lords, Lord Boyd-Orr, who is an Honorary Member of our Association, was presented with a bound copy of the book of essays entitled "Four Thousand Million Mouths," which was reviewed in these columns on March 22nd. Lord Haden Guest, who made the presentation, said he did so on behalf of the contributors, who all owed their inspiration to Lord Boyd-Orr's work. It was edited by Mr. F. E. Le Gros Clark and Mr. N. W. Pirie.

Lord Boyd-Orr said that a new policy for world food problems was in great need. Two out of three people in the world were inadequately fed and, with the rapidly rising tide of population and the falling reservoir of food resources, the position would get worse unless more vigorous action was taken on a world scale. The United Kingdom, the centre of the British Commonwealth and Europe, had already done much for the welfare of the people under its beneficent rule and should in its own interest take the lead in promoting a world food plan.

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SIXTH INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY

The sixth International Congress of Comparative Pathology was held in Madrid from May 4th to 11th, in the Faculty of Medicine in the University City.

The contributions to the Congress were grouped under subject headings as follow: "Fungi and Mycoses in Comparative Pathology"; "Trace Elements and Deficiency Diseases"; "The Comparative Pathology of Factors in Senescence"; "Microbial Symbiosis" and "Contact Insecticides."

Other papers were presented on a variety of subjects, many of which were of veterinary interest.

In a British delegation of about 15 persons were the following members of the profession: Professors Bosworth and Glover, Messrs. J. R. Hudson and D. L. Hughes, Dr. G. Kane and Mr. I. S. Beattie.

ABSTRACTS

Rush Medullary Fixation of Long Bones as Applied to Veterinary Surgery*

The essential feature of this method of treating canine fractures is the use of the Rush medullary pin. This consists of a round stainless steel rod which is available in four diameters and various lengths, but which differs from other medullary pins in possessing a curved sled-runner-like point and a hooked head which faces in the same direction as the slightly curved point. The main advantages claimed for this type of pin are:—

1. The curved point and the flexible nature of the pin permit the introduction from the sides of the bone as well as from the end.
2. The hooked end of the pin fits around the bone cortex and checks migration in or out of the bone.
3. The spring-like nature of the pin results in the exertion of three-point pressure within the medullary canal, thus preventing displacement or rotation and permitting the fixation of fractures near joints.
4. The pins need not be removed subsequently.

It is emphasised that the number of pins required and their point of introduction must be decided from a careful study of the X-ray pictures before attempting any operation. Usually, one pin is sufficient, but in fractures towards the ends of bones, and in bones with particularly large medullary cavities, two pins may be required and are usually inserted from opposite sides of the bone.

The patient is prepared for operation in accordance with the techniques usual for bone surgery, but provision should be made for the taking of X-ray pictures during the course of the operation.

It is stated that where there is little muscle covering the fractured bone open reduction is unnecessary, but where this is not so, or in compound or comminuted fractures, exposure of the fracture site is advisable. The pin is introduced into the bone through a hole in the cortex which is drilled at an oblique angle, so that the curved point of the pin strikes the opposite cortex and slides along it as it is tapped into position. After crossing the fracture site, the position of the pin should be checked by X-ray examination and if correct it may be driven home and the hooked head pressed firmly around the cortex at the site of insertion. In the case of comminuted fractures bone fragments may be either removed or maintained in position by encircling stainless steel wire.

Details, illustrated by X-ray pictures, are given of two cases treated by this method. S. W. D.

* **Rush Medullary Fixation of Long Bones as Applied to Veterinary Surgery.** CARNEY, J. P. (1952.) *Vet. Med.* **47.** 43-47.

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Surital Sodium and Morphine Anaesthesia in Canine Surgery*

The use of morphine to prolong the action of surital sodium (an ultra-short-acting theobarbiturate) and also to reduce the quantity required to produce anaesthesia is described.

Morphine ¼ gr. and 1/150 gr. atropine sulphate were given to each of 150 dogs of various weights and ages, and followed after 20 to 30 minutes by the intravenous injection of a 5 per cent. solution of surital sodium. It was found that for each 5 lb. of bodyweight the approximate

* **Surital Sodium and Morphine Anesthesia in Canine Surgery.** YOUNG, W. C., Jnr., & EADS, F. E. (1952.) *Vet. Med.* **47.** 97-98.

dose required to produce anaesthesia was 0·5 c.c. of a 20 per cent. solution [this would appear to be a misprint for 5 per cent. solution—*Abstractor*]. It is claimed that after the administration of morphine it is possible to administer the intravenous injecton of the barbiturate without assistance. [No details are given of the technique employed, nor does it appear that the dose of morphine was related to the size of the dog—*Abstractor*].

This form of anaesthesia is suitable for any operation occupying 15 minutes or less. Should longer anaesthesia be required an additional injection of about one-quarter of the original dose of surital sodium is usually satisfactory, and may be repeated if necessary. Excitement occurred with 1 per cent. of the dogs anaesthetised, and with two animals artificial respiration was necessary. There were no other ill effects, and no deaths are recorded. An average of 25 minutes' surgical anaesthesia was obtained and complete recovery followed in three to five hours.

S. W. D.

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Seasonal Variations in the Worm Burden of Scottish Hill Sheep*

This subject has been studied for a number of years by workers in the Department of Zoology, Edinburgh, and the results now recorded confirm those previously obtained, and show that from a low level in January the worm egg counts in Scottish hill sheep increase and reach a peak about May or June and thereafter decline. The genera *Ostertagia* and *Trichostrongylus* contribute mainly to the spring increase and these genera are commonly associated with outbreaks of parasitic disease in young sheep during the early months of the year. The authors conclude that the demonstrable spring increase in the worm burden is adequate to account for the rise in worm egg output and there is therefore no need to postulate a stepping-up in the egg-laying capacity of the worms. It is of much interest to realise that heavy infestations, particularly of *Osterlagia* spp., can be acquired by sheep during winter when the external temperatures appear to be too low for rapid development of the free-living stages. Workers in Australia have also shown that this species is well adapted to low temperatures. In Scotland the level of infestation is governed more by the host's resistance than by the intake of infestive larvae and the spring rise exactly coincides with exposure to adverse weather and to a low level of nutrition.

These results have an important bearing on the problem of controlling loss from worms in hill sheep by prophylactic dosing. It is quite clear that the regular sheep stock can be important nematode carriers from year to year, and that the greatest pasture contamination occurs around lambing time with concomitant risks to the poorly resistant ewe and the non-resistant lamb. Spring dosing therefore must be undertaken. On the basis of this investigation the authors are certain that anthelmintic dosing should be undertaken before lambing and in any case the practical difficulties involved in handling pregnant ewes are actually less than in dealing with suckling ewes in May. Field trials are necessary, however, to find out what exactly are the risks and difficulties involved, and also to check that the results are likely to be economically justifiable. Preliminary trials have given encouraging results. Finally, the authors draw attention to the advisability of anthelmintic dosing of Scottish hill hoggs—stock sheep during their first winter—and state that preliminary experiments involving dosing during autumn, winter and spring are showing good results and these sheep have recorded increased liveweight gains.

W. L. S.

* **The Seasonal Variations in the Worm Burden of Scottish Hill Sheep.** Morgan, D. O., Parnell, I. W., & Rayski, C. *J. Helminth.* (1951,) **25**. 177-212.

NOTES AND NEWS

Diary of Events

June 19th.—Herts and Beds Division, B.V.A., Summer Meeting at Luton, 2.45 p.m.

June 19th.—Meeting of the Western Counties Division, B.V.A., at Exeter (Imperial Hotel), 2 p.m.

June 24th.—Meeting of the Society for the Study of Animal Breeding, at the Wellcome Research Institute, 183-193, Euston Road, London, N.W.1, 2.15 p.m.

June 25th.—B.V.A. Meetings at 36, Gordon Square, London, W.C.1—Grassland Conference Sub-committee, 10.45 a.m.; Technical Development Committee, 1.30 p.m.

June 25th.—Annual Meeting of the North of Scotland Division, B.V.A., at Aberdeen (Northern Hotel), 2.30 p.m.

June 27th.—Meeting of the Yorkshire Division, B.V.A., at Leeds (Hotel Metropole), 2.30 p.m.

July 7th.—Annual General Meeting of the Association of Veterinary Teachers and Research Workers (Northern Region), at the Veterinary Field Station, Leahurst, Neston, Wirral, 11 a.m.

Sept. 8th—13th.—Seventieth Annual General Meeting and Congress of the British Veterinary Association, at Harrogate.

R.C.V.S. Examinations

June 26th/27th.—R.C.V.S. Membership Written Examinations.

Council and Committee Meetings of the B.V.A.

The next quarterly meetings will be held in London on July 21st, 22nd and 23rd, in the following order:—

July 21st.—Monday, 12 noon, Parliamentary and Public Relations Committee; 2.30 p.m., Organising Committee.

July 22nd.—Tuesday, 10 a.m., Veterinary State Medicine Committee; 12 noon, Home Appointments Committee; 2 p.m., General Purposes and Finance Committee.

July 23rd.—Wednesday, 11 a.m., Council Meeting.

Technical Development Committee, B.V.A.

Members are asked to note that the time of the Technical Development Committee meeting fixed for June 25th has been changed from 2 p.m. to **1.30 p.m.** at 36, Gordon Square, W.C.1.

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"Laboratory Aids to Clinical Diagnosis"

We are asked to announce that the illustrated booklet "Laboratory Aids to Clinical Diagnosis," which has been prepared by the Technical Development Committee of the British Veterinary Association, will be distributed to all members of the Association with the issue of *The Veterinary Record* of June 21st. An announcement regarding the availability of this publication to non-members will be made at a later date.

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PERSONAL

The Queen's Birthday Honours

The first Birthday Honours conferred by the Queen, announced on June 5th, included two awards to members of the veterinary profession.

The O.B.E. in the Civil Division of the Order of the British Empire is conferred upon Mr. Harvey Spurgeon Purchase, B.Sc. (Vet. Sc.), Ph.D., F.R.C.V.S., lately Chief Veterinary Research Officer at Kabete, Kenya, while the profession also will welcome the award of the Imperial Service Order to Captain Harry Vincent Mercer Metivier, O.B.E., B.Sc., M.R.C.V.S., Deputy Director of Agriculture (Animal Husbandry), Trinidad.

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Lieut.-Colonel J. Hickman's Appointment in the University of Cambridge

It is announced that Lieut.-Colonel J. Hickman, M.R.C.V.S., has been elected to the Readership in Animal Surgery in the Department of Veterinary Clinical Studies in the University of Cambridge, with tenure of office as from October 1st.

Colonel Hickman qualified from the Royal Veterinary College, London, in 1935, and after a year as House Surgeon joined the R.A.V.C. He was with the Corps from 1936 to 1947 and during this period served in India, France, Belgium and Germany.

In 1947 he was permitted to retire to take up the appointment of Reader in Surgery at the Royal Veterinary College, London. In 1948 he obtained an Overseas Visiting Fellowship of the Animal Health Trust, which enabled him to work under the guidance of Dr. F. C. Mann at the Institute of Experimental Medicine, Mayo Foundation, U.S.A.

On his return in 1949 he was appointed Senior Research Officer of the Equine Research Station of the Animal Health Trust.

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Births.—Lewis.—On June 5th, 1952, at Carmarthen Infirmary, to Aldyth, wife of T. R. Brian Lewis, B.SC., M.R.C.V.S., Hafod, Ammanford, a daughter—Ruby Briony.

Roddis.—On June 1st, 1952, to Jeanne (*née* Rogers), wife of A. F. Roddis, B.SC. (VET. SCI.), M.R.C.V.S., of 3, Wollaston Road, Irchester, Wellingborough, Northants, a daughter.

Slater.—On May 12th, 1952, at St. Peter's Hospital, Shepton Mallet, to Margaret, wife of L. F. Slater, M.R.C.V.S., a son—Nicholas Francis.

Smith.—On May 24th, 1952, to Margaret Victoria (*née* Hope), wife of Antony Noël Smith, M.R.C.V.S., a son—Roger Michael Noël.

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Forthcoming Marriage.—Foster—Coward.—The engagement is announced between Alan Hickman Foster, M.R.C.V.S., only son of Mr. and Mrs. H. Foster, of Hale, Cheshire, and Elizabeth Beatrice Coward, second daughter of Mrs. and the late Mr. E. G. Coward, of Comilaroy, Mungindi, N.S.W., Australia.

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Death.—Somer.—On May 29th, 1952, at 14, Blyth Road, Bromley, Kent, Margaret G. Ross Somer, M.B., CH.B., wife of F. E. Somer, F.R.C.V.S., D.V.S.M.

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R.C.V.S. OBITUARY

Bennett, Sampson, 6, Heathfield Avenue, Saltdean Mount, Brighton. Graduated London, December 16th, 1890. Died June 5th, 1952; aged 85 years.

Green, George, Major R.A.V.C. (T.A.) (retd.), Bramley Park, Bramley, near Rotherham. Graduated Edinburgh, July 26th, 1894. Died May 31st, 1952; aged 78 years.

Lake, Bruce Launcelot, D.S.O., O.B.E., Lieut.-Colonel R.A.V.C. (retd.), of The Lodge, Cornborough, Abbotsham, N. Devon. Graduated London, December 13th, 1899. Died May 23rd, 1952.

Mr. George Green, M.R.C.V.S.

Mr. George Green, whose death we announce with much regret, had practised in Rotherham for over 40 years. A native of Skipton, Mr. Green saw active service in the 1914-18 war in France, Italy and Austria. He was a keen member of the Phoenix Lodge of Freemasons.

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Colonel B. L. Lake

Colonel Lake, whose death we record with deep regret, was for 11 years, from 1930, Chief Veterinary Officer of the Royal Society for the Prevention of Cruelty to Animals, retiring in 1941. After his retirement he returned to duty as Veterinary Surgeon in charge of the Fulham Clinic of the Society, until ill-health compelled his retirement in 1949. Colonel Lake's work at the Fulham Clinic was outstanding and he was greatly beloved by all associated with that important centre.

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Dr. Raymond A. Kelser

The current issue of *Veterinary Medicine* records, to our deep regret, the death on April 16th, 1952, from a heart attack, of Raymond Alexander Kelser, D.V.M., M.A., PH.D., Brigadier-General, U.S.A., retired, who at the time of his death at the age of 59 years was Dean of the School of Veterinary Medicine and Professor of Bacteriology in the University of Pennsylvania. Dr. Kelser was one of the company of distinguished members of the veterinary profession resident overseas upon whom, to mark the occasion of the holding of the XIVth International Veterinary Congress in London in 1949, the President of the Royal College of Veterinary Surgeons conferred the diploma of Honorary Associateship.

Formerly Chief of the U.S. Army Veterinary Corps, Brigadier Kelser was one of the country's leading bacteriologists and immunologists, being widely known for his work in developing a greatly improved vaccine the large-scale use of which enabled the Philippine Government to eradicate rinderpest from the Islands; also for his discovery of the mode of transmission of equine encephalomyelitis. In collaboration with Dr. Harry W. Schoening he published the well-known work of reference "Manual of Veterinary Bacteriology," now in its fifth edition.

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GENERAL OBITUARY

SIR ARCHIBALD WEIGALL, Bt., K.C.M.G.

An Appreciation

Sir Archibald Weigall died at his home, Entrance Lodge, Englemere, Ascot, on Tuesday, June 4th, 1952. He was 77 years of age.

Sportsmen all over the world will mourn the passing of a great English gentleman. Tall and spare, and always immaculately groomed, he graced any scene with a nonchalant and elegant air. He had a brilliant wit and a power of repartee which sparkled like champagne to which a slight impediment in speech only added further attraction. For many years he was one of the leading personalities in agricultural circles and above all he was a great horseman. He was a man of many parts and had served his country with distinction as a soldier, politician and administrator..

After leaving Wellington College he entered the Royal Agricultural College where he was gold medallist in 1894. He was an "institution" at all those places where horsemen foregather—Richmond, Windsor, The Royal, Olympia and Ascot—sometimes exhibiting his own horses, at others acting as President, judge or even just as a humble steward, giving of his best with a vim which was in no way diminished by advancing years.

Probably his greatest interest was centred on the Royal Agricultural Society, the Royal Empire Society and the Royal Veterinary College.

It is with reference to his work on behalf of the Camden School that we of the veterinary profession and especially the staff, the students and graduates, will always remember him with gratitude. He served the College as a Governor, as Treasurer and Chairman. He came on the Board when the College was in dire need and threatened with extinction. He lived to see it rise again—well equipped academically, financially and materially—and become a recognised school of a great university. He was one of a trio who made this possible: Sir Frederick Hobday, Sir Merrik Burrell and Sir Archibald.

For the last two or three years he suffered a painful and protracted illness and a great sorrow in the passing of his wife, Lady Weigall. He bore his trials with great fortitude just as one would expect of him. He orientated his mode of life to suit the circumstances so that he could have his ride in the park and continue to work for all those interests so dear to his heart. He attended the last meeting of the Court and Council of the Royal Veterinary College and took a very vigorous part in the proceedings. It was the day of the "Lincoln." He came to the meeting armed with a small portable wireless set and at the appropriate moment, and to the delight of all present, he set it in action. I doubt if any other man would have thought of, or dared to do, such a thing.

The incident was typical of the man who could not only do the right thing at the right time yet when the occasion demanded do the unorthodox thing still at the right time

We shall all miss the presence of a kind, witty and courageous man in whom we had confidence and trust. J. McC.

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LEGAL NOTES

Successful R.C.V.S. Objection to Description "Animal Clinic"

For using a false description in connection with a business calculated to lead people to believe she was a veterinary surgeon, Amy Emily Cooper, of Station Road, Rayleigh, was fined £4 at Southend on May 28th.

She did not appear and gave no explanation in writing in regard to the offence.

Prosecuting on behalf of the Royal College of Veterinary Surgeons, Mr. J. C. Lamb stated (says the *Southend Standard*) that the case was brought under the Veterinary Surgeons Act of 1948, the object of which was to restrict the practice of veterinary surgery by unskilled persons. Defendant had premises at Station Road, Rayleigh, with a notice board outside bearing the words "Animal Clinic." It was this description to which the R.C.V.S. objected, as it was calculated to lead people to believe the owner possessed certain qualifications.

When questioned, defendant said she had carried on such a business for 28 years, and added: "I don't think it is a crime to relieve suffering animals."

Mr. Lamb added that defendant had been warned two years ago to cease describing the business as an animal clinic.

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ROYAL VETERINARY COLLEGE SIXTH ANNUAL SPORTS DAY

This was held on Saturday, May 24th, in glorious weather, at Goring-on-Thames Recreation Ground. Several college records were broken, and First Year, who came down from London in great strength, won two of the three trophies. Delicious teas at very moderate prices and prepared by final year students and student wives were served in Goring Parish Hall and from here the spectators and competitors moved to the grounds of Streatley House, where the jumping events were held.

At the prizegiving, also held in the grounds, Mr. Greatorex, M.R.C.V.S., F.R.SAN.I., the President of the Athletic Club, expressed his delight at the presence of so many parents and post-graduates, as this had been one of his wishes when he founded the annual sports day in 1947. This was also the first occasion upon which the sports had been blessed with fine weather.

Mr. Marchant, B.SC., from the London section and Mr. Ayliffe, President of the Students' Union, thanked the Committee for all the hard work that had been put into the preparations for the event.

Mrs. Greatorex presented the trophies and medals to the winners, after which Professor Buxton, M.A, F.R.C.V.S., D.V.H., the Principal, expressed his gratitude to Mr. Greatorex for arranging the sports day, as it brought the London and Streatley sections closer together.

Mr. Greatorex concluded the proceedings by saying how pleased he was that First Year had done so splendidly, as it was a good omen for the future of college athletics.

A most enjoyable day was rounded off by a well-supported dance in the evening.

Results

Event	Winner	Records Broken
100 Yards	M. L. Teale	10-05 sec.
220 Yards	B. T. Lawrence	
440 Yards	J. M. Evans	54 sec.
880 Yards	J. M. Evans	2 min. 3 sec.
80 Yards (Women)	Miss Davies	
One Mile	J. Brunsdon	
120 Yards Hurdles	B. T. Lawrence	14-2 sec.
Cricket Ball	G. J. Nelson	
Shot	T. G. F. Gillett	
Discus	D. L. Haxby	
Javelin	F. E. T. Gibson	
High Jump (Women)	Miss G. M. Walker	4 ft. 6 in.
High Jump (Men)	M. E. Keep	5 ft. 4 in.
Long Jump (Women)	Miss G. M. Walker	
Long Jump (Men)	T. C. B. Swayne	
Hop, Step and Jump	T. M. James	

Buxton Medley Relay Trophy ... First Year
Tanner Tug-of-War Trophy ... Final Year
Greatorex Inter-Year Trophy ... First Year

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

ANTHRAX:

Carmarthenshire.—Nantymwyn Farm, Rhandirmwyn, Llandovery (June 3rd).

Cornwall.—Vicarage Farm, Viscar, Wendron, Helston (June 3rd).

Lancs.—Broad Carr Farm, Oswaldtwistle, Accrington (May 31st).

Leics.—Pennbury Farm, Stretton Lane, Great Glen, Leicester (June 3rd).

Norfolk.—Manor Farm, Harpley, King's Lynn (June 5th).

Northants.—Lime Street Meadow, Irthlingborough, Wellingborough (June 4th).

Somersetshire.—Melsbury Farm, Polsham, and Double House Farm, Henton, Wells (June 3rd).

Stirlingshire.—Carbeth Home Farm, Killearn, Glasgow (May 29th); Tippetcraig Farm, Bonnybridge (June 5th).

Wilts.—Marsh Hill Farm, Lacock, Chippenham; Manor Farm, Monkton Farleigh, Bradford-on-Avon (June 3rd).

FOOT-AND-MOUTH DISEASE:

Ches.—The Royals, Aston, Nantwich (May 29th); Cuckoo Lane, Acton, Nantwich (June 1st); Kynsal Lodge Farm, Audlem, and Hankelow Manor, Hankelow, Crewe; Hoole Old Hall Farm, Hoole, Chester (June 2nd); Hollins Lane Farm, Kew Hall, Aston, Nantwich (June 3rd); Hall Farm, Hankelow, Crewe (June 4th); Woodfield and Hatherton, Nantwich (June 5th); Heartley Lane, Broomhall, Nantwich (June 7th); Brine Pits Farm, Pool Lane, Nantwich (June 8th).

Dorset.—Red Cliff Farm, Wareham (June 3rd); The Ridge Farm, Wareham (June 5th).

Dumfriesshire.—Killylung Farm, Holywood, Dumfries (June 2nd); Rosehill Farm, Holywood, Dumfries; Mill Hill, Lockerbie; Muirside, Dumfries (June 3rd); Small Home, Hightae, Lockerbie (June 6th).

Hants.—Redbrook Farm, Fordingbridge (June 8th).

Isle of Wight.—Colemans Farm, Porchfield, Newport (May 30th).

Oxon.—Spring Farm, Broughton, Banbury (June 5th).

Staffs.—Awlersbrook Field, Moddershall, and Cotwalton Farm, Cotwalton, Stone (May 30th); White Lion Fields, Knighton, Market Drayton (May 31st); Fordhayes Farm, Hulme, Longton, Stoke-on-Trent (June 1st); Park House Farm, Ashley, Market Drayton (June 2nd).

Sussex (E.).—Honey Crocks Marshes, Hailsham (May 29th); The Lemons, Westfield Marsh, Down Ash, Hailsham; Easons Green Farm, Framfield, nr. Uckfield (May 30th); Broomhurst, Broad Oak, Heathfield (May 31st); Seymours Farm, Down Ash, Hailsham (June 1st); Town Farm Dairy, Hailsham (June 2nd); Squire's Farm, Eason's Green, Framfield, Uckfield (June 6th); Marshfoot Farm, Hailsham (June 7th).

Warwicks.—Alveston House, Alveston, Stratford-on-Avon (June 2nd).

SWINE FEVER:

Berks.—Buckhold Hill Cottages, Buckhold (June 2nd).

Brecon.—Penmaenllwyd Far, Llanwrtyd (June 2nd).

Cumberland.—Burnside, Hethersgill, Carlisle (June 4th); White Hill, Scaleby, Carlisle (June 6th).

Derbyshire.—Ballarat Allotment, New Whittington, Chesterfield (June 6th).

Glouc.s.—1, Cammomile Green, Lydbrook (May 30th); Gunsmills, Mitcheldean (May 31st).

Herefordshire.—Benhall Farm, Bridstow, Ross-on-Wye (June 4th).

Lancs.—Bridgend Farm, Bispham (June 2nd); Bankfield Manor, Singleton (June 6th).

Lincs (Holland).—Causeway House, London Road, Wyberton, Boston; Hill Farm, Brothertoft, Boston (June 2nd).

Oxon.—North Dickeradges, Paine Hill, Steeple Aston (June 6th).

Staffs.—The Cottage, Main Street, Stonnal, Walsall (June 2nd).

Surrey.—Upton Farm, Caterham (May 31st).

Warwicks.—74, Coventry Road, Exhall, and Station Road, Balsall Common, Coventry (June 2nd); Lodge Farm, Warton, Tamworth (June 3rd); Stroud Hill Farm, Woodford Halse, Rugby (June 4th); Grounds Farm, Kenilworth (June 5th); Wildmoor, Alcester Road, Stratford-on-Avon (June 6th).

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Foot-and-Mouth Disease

Famous Ayrshire Herd Slaughtered

Foot-and-mouth disease struck its most severe blow since the outbreaks began in Scotland when, last week, it affected the world-famous Muirside herd of Ayrshire cattle and flock of Border Leicester sheep belonging to the veteran breeder, Mr. James Howie, O.B.E. Since then, fresh outbreaks have been reported from Dumfriesshire—also, in England, from Cheshire, Dorset, Hants, Kent, Oxon, Shropshire and Warwickshire.

At mid-week the total number of outbreaks since November 14th was 421; the number of animals slaughtered being 25,024 cattle, 16,128 sheep, 9,786 pigs and 37 goats. The amount paid in compensation for the first 303 outbreaks totalled £1,319,943.

Delay in Reporting Suspected Cases

In an announcement on June 5th the Ministry of Agriculture state that a few cases have occurred recently where owners of stock have allowed three or four days to elapse before reporting suspected cases of foot-and-mouth disease. "To prevent the spread of the disease immediate reporting is of the utmost importance. Farmers are therefore urged to keep a close watch on the health of their stock and to report to the police immediately anything which gives rise to a suspicion that foot-and-mouth disease may be present."

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ANCIENT OX HORN FOUND IN THAMES

At a recent meeting of the Thames Conservancy Board, it was reported that the core of a horn of *Bos primigenius*, or the Urus, an ancestor of domestic cattle, had been recovered from the Thames during recent dredging operations near Maidenhead. Sir Jocelyn Bray, the Chairman, said there appeared to be some doubt about its age, but according to a report by Mr. W. A. Smallcombe, Director of Reading Museum, who identified it, its date could be between the last two glaciations of the Quaternary period (upwards of 150,000 B.C.), and comparatively recent times. The Board agreed that the horn should be lent, with other Thames relics, to Reading Museum.

XUM

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

INTERMITTENT LUXATION OF THE PATELLA

Sir,—In a most interesting clinical communication by Professor Mitchell (1949) intermittent luxation of the patella was associated with convincing histological changes in the nerves of the affected leg; these findings were controlled by the exhibition of a section of the femoral nerve from the other side of the animal. It was stated that no pathological changes were noted in sections of the spinal cord.

In a second communication (Mitchell & Zlotnik, 1952) it was stated that after further histological investigation abnormalities had been demonstrated in the spinal cord, and a wider search for similar abnormalities in crippling diseases of horses was advocated.

In view of the possibility of a more extended search for these abnormalities we would like to point out that we feel a little uncertain that the changes recorded in the spinal cord were associated with the lesions in the nerves. We feel that under precisely similar conditions of fixation such abnormalities could be demonstrated in horses dying from a wide variety of diseases.

It could be argued that all horses showing these abnormalities were, in fact, affected by crippling diseases in addition to the disease from which they died. It would therefore be of the greatest help to readers interested in neuropathology if investigators made some clear statement to the effect that under the same conditions of fixation they had been unable to demonstrate similar abnormalities in horses of the same age which were not suffering from crippling diseases and, where possible, to contrast the abnormal pieces of spinal cord with adjoining pieces free from abnormality.—Yours faithfully, H. H. Holman and I. H. Pattison, A.R.C., Field Station, Compton.

References

Mitchell, W. M. (1949.) *Vet. Rec.* **61.** 352.
——, & Zlotnik, I. (1952.) *Ibid.* **64.** 329.

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TUBERCULOSIS—BOVINE/HUMAN RELATIONSHIP

Sir,—Further to my letter dated August 18th, 1951, giving details of high and low percentage attested cattle counties in Scotland and the effects on human infection, I have collected data relating to some of the highest and some of the lowest attested counties in England with their human relationship.

In the following summary it can be taken that the early years quoted contained no, or few, attested cattle. The final figures of number of attested cattle as at December 31st, 1951, are given in each case (col. 6).

England (High percentage Attested Cattle)

County	Years	Total pulmonary notifications	Total non-pulmonary notifications	Years	Percentage cattle attested	Total pulmonary notifications	Total non-pulmonary notifications
Westmorland	1920/24	101	93	1947/51	77·8%	242	77
Dorset ..	1920/4	1,583	305	1947/51	41·7%	966	250
Hertford ..	1920/4	2,516	697	1947/51	30·3%	2,397	472
Cumberland	1920/4	1,009	286	1946/50	55·4%	997	234
Oxford ..	1920/4	615	170	1947/51	38·0%	639	187
Surrey ..	1920/4	3,899	724	1947/51	16·9%	5,642	851
Hampshire ..	1920/4	1,547	392	1947/51	42·5%	2,256	470
Berkshire ..	1920/4	1,011	245	1947/51	47·0%	1,248	291
Isle of Wight	1920/4	465	54	1947/51	45·1%	425	138

England (Low percentage Attested Cattle)

Nottingham	1920/4	1,702	398	1947/51	12·4%	2,321	337
Leicester ..	1920/4	1,650	372	1947/51	18·3%	1,116	312
Cornwall ..	1920/4	1,578	313	1947/51	13·9%	1,185	198
Hereford ..	1920/4	722	181	1947/51	20·0%	609	171
Northumb. ..	1920/4	2,251	1 018	1947/51	15·8%	2,362	558
Stafford ..	1920/4	3,569	976	1947/51	13·3%	3,606	604
Warwick ..	1920/4	2,269	641	1947/51	18·7%	2,360	482
Devon ..	1920/4	1,108	734	1947/51	16·4%	1,640	350
Yorks (E.R.)	1920/4	729	166	1946/50	5·8%	789	145
(Population increased 158,887 to 212,070).							
Derby ..	1920/4	3,557	1,385	1947/51	16·3%	1,951	436

The Milk Marketing Board informs me that in the County of Dorset 45,946 000 gallons of milk were sold off farms in 1951, and that 22,690,000 gallons of this quantity earned the T.T. premium for the producers. Dorset is one of the main milk supply counties for London. I know the county well enough (mainly through attending sheep fairs when a boy) to realise that the higher-priced milk would not appeal to the majority of its inhabitants, and that most of the T.T. milk goes to London. This would bring the county into the low attested areas.

In the same way Cumberland and Westmorland probably would send their milk to Lancashire.

The significant feature in Berks, Oxford, Hants, Surrey and the Isle of Wight is not only the great increase in pulmonary tuberculosis but also in non-pulmonary disease. This differs greatly from the Scottish high attested counties which in the main show a decrease.

The County of Nottingham appears to have a high incidence of tuberculosis. The Medical Officer informs me that the population has increased by one-third in the years quoted. It appears to me that the leather, clothing and coal-mining industries may predispose to the infection. My opinion is that if the attested cattle in the country reached 50 per cent. of the whole, human tuberculosis infection would become epidemic.

The increase in non-pulmonary tuberculosis in the Isle of Wight is significant. As indicated above, the Attested Cattle Scheme is causing a serious increase in human pulmonary and non-pulmonary tuberculosis infection.

In my opinion the recent small increase in human tuberculosis in England is entirely due to the Attested Cattle Scheme.

My thanks are again due to the various Medical Officers of Health who have supplied me with statistics.—Yours faithfully, L. Pitcher, 66, Coningsby Road, High Wycombe, Bucks. *May 14th*, 1952.

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SERVICE: A SUGGESTION

Sir,—A considerable number of veterinary surgeons have qualified without doing any military service, simply because the Army have not wanted their services; may I suggest, therefore, that the Ministry of Agriculture and Fisheries, after consultation with the War Office, should have power to claim these members for service with the Ministry should the occasion arise—as now, with all these cases of foot-and-mouth disease about. Service with the Ministry is in lieu of their military service. They will be serving their country and to better advantage.—Yours faithfully, G. C. Lancaster, Eastwick House, Evesham, Worc. *May 27th*, 1952.

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PRACTITIONERS ON THE SUPPLEMENTARY VETERINARY REGISTER

Sir,—The correspondence in recent issues of *The Veterinary Record* dealing with the relationship between members of the College and persons on the S.V.R. has both interested and disturbed me.

The proposed formation of a Division of the B.V.A. limited to persons on the Supplementary Veterinary Register (if granted) would, I think, perhaps tend to breed discontent rather than serve any really useful purpose.

The large number of veterinary surgeons with whom I come in contact (both professionally and socially) have, without exception, always shown the courtesy one expects from members, and invariably have treated me as an equal. The remark in Mr. C. Waller's letter, dated April 21st, 1952, relating to "scant courtesy and disparaging remarks," relates, I feel sure, to one of those isolated cases that are bound to occur, and is far better ignored.

I hope the foregoing may perhaps serve to check further lengthy controversy on this subject, which, in my opinion, can do nothing but harm to the profession generally.—Yours faithfully, B. M. Powell, Cedars Way, Newport Pagnell, Bucks. *June 3rd*, 1952.

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R.C.V.S. COUNCIL ELECTION

Sir,—May I be permitted, through the courtesy of this column, to express my gratitude to all members of the profession who voted for me at the recent R.C.V.S. Council election. Although I was not elected, I am deeply grateful to the 485 colleagues who thought me worthy of their vote.—Yours faithfully, Olga Uvarov, 4, Langton Avenue, Epsom Road, Ewell, Surrey. *June 7th*, 1952.

Weekly Wisdom

"... There is much misunderstanding about the Hippocratic method, and most people think that it is purely a method of clinical observation. It is, in fact, much more than that. It is a method of medical reasoning based on the Platonic principle of knowledge 'One in many, many in one,' and applying the Platonic dialect method. It should be remembered that Plato and Hippocrates were contemporaries and exercised a mutual influence on each other.

"What is this Platonic-Hippocratic dialectic as applied to medicine? I have obtained an intuitive conception of my patient as a whole, and I proceed into the analytical examination of the parts. In the course of this exploration I encounter discrepancies between my first intuitive picture and the analytical findings, and this stimulates new enquiries upon the basis of which the picture of the whole is again modified. I continue the process of discovering new discrepancies and making new enquiries. . . . We cannot know the parts if we do not know the whole. We have to pass dialectically from the whole to the parts and from the parts to the whole with the object of a superior synthesis which is diagnosis."—Cawadias, A.P. (1952.) *Proc. Roy. Soc. Med.* **45.** 306.

BRITISH VETERINARY ASSOCIATION

HARROGATE CONGRESS, 1952

Provisional Programme

Sunday, September 7th

8-10.30 p.m. "At Home," given by the Yorkshire Division, B.V.A., at the Hotel Majestic.

Monday, September 8th

10.0 a.m. Civic Welcome by His Worship the Mayor of Harrogate (Councillor A. V. Milton, J.P.) at the Royal Hall.

10.30 a.m. Official Opening of the Exhibition of Surgical Instruments, Drugs, etc., by the President, B.V.A., in the Royal Hall.

2.30 p.m. *Address :* "Disease and Animal Husbandry as dealt with by the Food and Agriculture Organisation of the United Nations," by Dr. Kestevan, Chief of the Animal Production Branch, Food and Agriculture Organisation of the United Nations.

8.30 p.m. Civic Reception and Dance given by the Mayor and Mayoress of Harrogate at the Corporation Lounge Hall, Parliament Street.

Tuesday, September 9th

9.30 a.m. *Paper :* "Technical and Practical Application of Electro-therapy in the Equine," by Mr. Norman Gold, M.R.C.V.S., of Redditch. Opener : Dr. A. C. Fraser, B.V.Sc., M.R.C.V.S., of Lambourn.

10.15 a.m. Annual Meeting of V.V.B.F. Ladies' Guild.

2.15 p.m. *Paper :* "Electrocardiography in the Horse" (illustrated by lantern slides), by Mr. W. C. Miller, M.R.C.V.S., F.R.S.E., and Lieut.-Colonel J. Hickman, M.R.C.V.S., Animal Health Trust. Time will be allowed for questions.

Films of Operative Procedures, prepared by the Royal Veterinary College.

Ladies' Excursion. Details not yet fixed.

8.30 p.m. President's Reception and Dance at the Hotel Majestic.

Wednesday, September 10th

9.30 a.m. *Paper :* "Feline Enteritis," by Dr. A. W. Gledhill, B.A., M.R.C.V.S., National Institute for Medical Research, Mill Hill. Opener : Miss W. M. Brancker, M.R.C.V.S., of Sutton Coldfield.

12 noon Last meeting of 1951-52 Council, in Royal Hall.

2.30 p.m. Congress Photograph in Royal Hall Gardens.

3.0 p.m. Annual General Meeting in Royal Hall.

7.30 p.m. for 8 p.m. Annual Banquet at the Hotel Majestic.

Thursday, September 11th

9.30 a.m. *Paper :* "Q Fever (The Domestic Animal as a Source of Infection to Man)," by Dr. G. Slavin, M.R.C.V.S., Senior Research Officer, Ministry of Agriculture and Fisheries, Weybridge. Opener : Dr. H. T. Findlay, Public Health Laboratory Service, Wakefield.

Paper : "*Vibrio foetus* Infection in Cattle," by Mr. J. R. Lawson, M.R.C.V.S., Senior Research Officer, Ministry of Agriculture and Fisheries, Weybridge. Opener : Mr. G. Seaton Powley, M.R.C.V.S., of Wetherby.

AFTERNOON : Free for golf, tennis, bowls, etc.

Congress Excursion. Details not yet fixed.

8.30 p.m. Ladies' Guild Dance.

Friday, September 12th

9.30 a.m. *Paper :* "Modern Insecticides, and Ectoparasite Control," by Mr. W. Downing, F.R.C.V.S., Mr. H. E. Harbour, B.A., M.R.C.V.S., and Mr. L. C. Stones, B.A., M.R.C.V.S., Cooper Technical Bureau. Opener : Mr. I. W. Montgomery, B.V.Sc. (Syd.), I.C.I. of Australia and New Zealand.

2.30 p.m. Repeat showing of Cine-films, in colour, of various major operations on small animals carried out at the Royal Veterinary College and Hospital, London (and as presented by Mr. G. C. Knight, F.R.C.V.S., at the Eastbourne Congress).

2.30 p.m. Sectional Meeting : A meeting of the Association of Veterinary Teachers and Research Workers in the Council Chamber, Municipal Building (opposite Royal Hall).

EVENING : Theatre Party. Details not yet fixed.

Saturday, September 13th

10.0 a.m. Closing meeting of the Congress, followed by First Meeting of 1952-53 Council, in the Royal Hall.

Throughout the Congress there will be an Exhibit of Specimens by the Veterinary Laboratory, Ministry of Agriculture, in the Royal Hall.

BRITISH VETERINARY ASSOCIATION CONGRESS, 1952

September 8th to 13th

RECOMMENDED HOTELS AT HARROGATE

The following is a list of recommended hotels at Harrogate, giving particulars of accommodation, charges, etc. Members are advised to make reservations *as soon as possible* direct to the hotel of choice. The Majestic is the headquarters hotel for the period of the Congress.

If any member requires information regarding guest or apartment house accommodation in Harrogate, this can be obtained direct from the Conference Secretary, Harrogate Corporation, Royal Hall, Harrogate.

Name	Address	Telephone number	Garage	Total number of guests	Full board (three days or more) per day	Full board (less than three days)	Bed and breakfast (three days or more)	Bed and breakfast (less than three days)
Beechwood Court	Cold Bath Road	—	Yes	150	18/- to 22/-	—	12/6	—
Berkeley	35, Victoria Avenue	430811	Nearby ; large yard	25	21/- to 25/-	—	15/-	—
Boston	Swann Road	2918	Open yard	30	18/6	20/-	13/6	15/-
Britannia Lodge ...	Swann Road	4206	Nearby	16	21/-	—	12/6	—
Brompton House...	94, King's Road	6128	Open yard	16	18/- to 21/-	—	13/6	—
Cairn Hydro Hotel	Ripon Road	4005	Yes	240	27/6 to 35/-	—	21/-	—
Cecil	Valley Drive	2148	No	80	25/-	—	15/-	—
Claremont... ...	Victoria Avenue	283311	No	80	24/-	—	—	—
Clarendon ...	27, West Park	447811	Yes	25	25/-	—	17/6	—
Dirlton	23, Ripon Road	6662	No	80	17/- to 20/-	—	12/6	—
Eversfield	1, Swann Road	204511	Yes	14	27/6	27/6	15/-	—
Fernlea	Swann Road	5952	No	16	21/-	—	12/6	—
Granby	Granby Road	3046–8	Yes	100	30/- to 35/-	—	21/- to 25/-	—
Grand	Cornwall Road	4631	Yes	300	35/- to 47/6	—	25/- to 32/6	—
Grange	West Stray	2656	Adjoining	100	21/- to 25/6	—	12/6 to 14/6	—
Green Park ...	Valley Drive	4681	Nearby	80	25/-	—	15/- to 17/6	—
Kensington ...	Valley Drive	2787	No	50	21/- to 25/-	—	15/-	—
Kirksyde	St. Mary's Walk	4472	No	60–70	21/- to 24/-	—	14/6 to 16/6	—
Knowle	Coppice Drive	2539	Yes	20	21/- to 25/-	—	15/-	—
Langham	Valley Drive	284711	No	80	25/-	—	15/-	—
Majestic	Ripon Road	2261	Yes	300	49/-	—	27/6	—
Metropole ...	Valley Drive	593211	No	32	22/6	25/-	15/-	—
Mount Edgecumbe	103–105, Valley Drive	23721 [1]	Open yard	30	21/-	—	15/-	—
North Eastern ...	Station Square	4657	No	40	25/-	—	16/-	—
Octagon	Valley Drive	2611	No	36	22/6	—	15/-	—
The Old Swan ...	Swann Road	4051	Yes	300	25/- to 35/-	—	21/- to 25/-	—
Prince of Wales ...	West Park	6675	Yes	210	30/- to 42/-	—	21/- to 30/6	—
Prospect	Prospect Place	5071	Adjoining	150	27/6 to 38/-	—	20/- to 27/6	—
Ridings	Springfield Avenue	2602	No	25	21/-	—	—	—
Riversdale ...	17–19, Valley Drive	6193	No	32	21/-	—	14/6	—
Russell	Valley Drive	3134	Nearby	80	25/- to 30/-	—	16/6 to 17/6	—
Somerset	Parliament Street	450111	Yes	17	25/-	—	16/6	—
Studley	Swann Road	6007–9	No	28	30/-	—	—	—
Valley Gardens ...	Valley Drive	3675	No	70	25/-	—	15/-	—
West Park ...	West Park	231011	Yes	25	25/-	—	15/-	—